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A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

MARCH 25 1891.

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Roads and Roadsides. (With illustration.)
Editorial.

How We Renewed an Old Place.
By MRS. J. H. ROBBINS.

Points in Chrysanthemum Culture.
By JOHN THORPE.

Phyllanthus pallidifolius. (With figure.)

The paper will contain an illustration of a New Hampshire Road and one of Phyllanthus pallidifolius, from photographs.

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The Silver Maple.

THE Silver Maple is one of the largest and most beautiful trees in a genus peculiar for the beauty of its species. To many people, perhaps, who know it only as a shade or street-tree, the Silver Maple does not always appear to be a handsome or desirable tree. Planted, as it has been very generally, for such purposes it often has a weak and overgrown appearance, as if it had outgrown its strength; the branches are brittle and easily broken by wind and snow, the foliage is often thin, and the leaves fall early. This is the Silver Maple to people who know it in towns only and who see a tree in the wrong place, and where all the conditions are unfavorable to the development of its beauty. There are trees, like the Scarlet Maple, the River Birch and our eastern Larch, which seem to flourish as well when they are placed in unnatural conditions of soil and surroundings as in the situations in which they grow naturally, and which thrive as well on a hillside as in their native swamps. The Silver Maple is more fastidious. Unfortunately, it grows very rapidly, and even in unfavorable situations few trees will attain a greater height or a thicker stem in the first forty or fifty years of their existence. It is this rapidity of growth that has made the Silver Maple a favorite with people who are in a hurry to obtain immediate effects and do not care to look very far ahead; and at one time it was planted in the northern states, especially in cities and their suburbs, in immense numbers, without much regard being paid to the fitness of the position selected for it.

The Silver Maple is an inhabitant of low, sandy river-banks, and it is on river-banks only or in low meadows that it displays its beauty; and the lover of trees, if he would see it at its best and would realize what the Silver Maple becomes when all conditions favor it, should float down one of the large streams which flow into the tributaries of the lower Ohio. Here may be seen the river-forests of the Mississippi-basin in their full richness and beauty, and Maple-trees unequaled in majesty and grace by those of any part of the world. In the rich alluvial soil which forms the low banks of such streams, the Silver Maple rises sometimes to the height of a hundred and twenty feet, with a trunk three or four feet in diameter. Ten or fifteen feet from the ground this divides usually into three or four stout, upright, secondary stems, which are destitute of branches for a considerable height above the division of the main trunk and then ultimately separate into many slender branches with slender, pendulous branchlets, the whole forming a wide and majestic head. The bark of the trunk on the old trees is bright reddish brown, more or less furrowed by deep, longitudinal fissures, while the surface separates easily into large, thin scales. On trunks of young trees and on the branches of old ones the bark is quite smooth and light gray, faintly tinged with red. The young branchlets are bright chestnut-brown, with a smooth and lustrous surface, and are marked with large, pale spots. The winter-buds are rather small and are covered with bright red, imbricated scales, with a conspicuous fringe of pale hairs on the margins. The ample leaves are often six or seven inches in length, rather less in width, and are deeply five-lobed by narrow sinuses, with acute, irregularly toothed divisions, the middle division being often larger than the others and somewhat lobed. They are thin and membranaceous, and borne on long, slender, bright red petioles they dance with the slightest breath of wind, displaying in turn the bright and cheerful green of their upper surface and the silvery whiteness which clothes their lower surface. In autumn they turn pale yellow.

The flowers of the Silver Maple, like those of our Red Maple, appear late in the winter, or in very early spring, long before the leaves; they are produced in sessile axillary fascicles on the shoots of the previous year, or on short spur-like branchlets developed the year before from the wood of the preceding season. The sterile and fertile flowers appear in separate clusters, sometimes together on the same tree, but more frequently on different trees. The buds from which they open are aggregated into compact clusters, and are covered with thick red and green scales fringed on the margin with long rusty brown hairs. The flowers are greenish yellow and have no petals; the calyx, which is five-lobed, is slightly hairy on the outer surface and is long and narrow in the sterile, and short and broad in the fertile flower. There are from three to seven stamens; in the sterile flowers the slender filaments lengthen until they become two or three times as long as the calyx when the pollen is discharged from the anthers, while in the fertile flowers the filaments do not lengthen after the bud opens, and the anthers wither or fall off without opening. The ovary, which is reduced to a minute point in the staminate flower, is covered with hairs. It is possible that perfect flowers with a fully developed ovary and stamens may be found, as such is the usual order of nature in the case of flowers which have become generally unisexual by the abortion of one of their organs, but if such flowers exist, they are uncommon. The ovary of the fertile flower develops into a large fruit with long broad wings, which are sometimes nearly straight and sometimes shaped like a scythe. The fruit ripens at the end of a few weeks after the flowering period, if it is not destroyed by spring frosts, as is often the case, for the Silver Maple, enticed into opening its flower-buds by the succession of a few warm days in late winter, pays for its temerity with the loss of its fruit. Sometimes only one of the two samara, of which the fruit of the Maple is made up, is developed, and it is not an uncommon thing to find a tree producing one-sided fruit, the second and undeveloped ovary appearing as a rudiment at its base. The seed of the Silver Maple, if it happens to fall on moist open ground, germinates immediately, and produces plants which grow sometimes to be nearly a foot high before winter and strong enough to have in their favor the chances of surviving the hardships to which all seedling plants are subjected. In this habit of early flowering and quick development of the seed of

our Silver and Scarlet Maples, a habit which is peculiar to them, may be found, perhaps, a wise provision for their perpetuation. These two trees grow on low river-banks or in swamps—situations which are often submerged for a considerable part of every year, especially in winter and early spring. If the seeds of these trees ripened in the autumn, like the seeds of other Maples, and did not germinate until the following spring, they would run a serious risk of being water-soaked and of losing their vitality. Now, however, they reach the ground at the very best period of the whole year for quick germination. The water has receded from about the trees, leaving a moist open surface, warm, but not yet baked by the sun of early summer. It is a question which we do not pretend to answer, whether these trees acquired this habit of ripening their seeds early in the summer in order to maintain their existence in the low situations where they grow, or whether, the habit having been previously acquired, they were gradually driven to the swamps because their seeds were unable to germinate on the drier uplands at the period of the year when it reached the ground and could only germinate in soil from which the water had recently receded, and was, therefore, full of moisture.

The Silver Maple is widely distributed in eastern America; it is found in the north from the valley of the St. John's River, in New Brunswick, to southern Ontario, and extends southward to western Florida and westward to eastern Dakota, Nebraska, Kansas and the Indian Territory. It is not found very near the Atlantic coast or in the high Appalachian Mountains. It is very common, however, west of the mountains throughout the Mississippi-valley, where it is one of the largest and most generally distributed of the river-trees.

The Silver Maple is often called also the Soft Maple, a name which it owes, probably, to the brittleness of its slender branches, for the wood of this tree is not soft, but hard, strong, close-grained and valuable, furnishing excellent material for the floors of houses and for furniture. It was the Swedish traveler Kalm who first distinguished the Silver Maple, and sent it to his master, Linnæus, who named it *Acer saccharinum*, a name which has unfortunately become more associated with another of our Maples than with the tree to which it properly belongs.

The Silver Maple has been cultivated in Europe since 1725, and flourishes there not so well, perhaps, as on the banks of its native streams, but better than many of our American trees; and in American and European nurseries a number of varieties with more or less cut or divided leaves, or with leaves blotched with yellow or with white, or with more or less pendulous branches, have appeared. None of these varieties, however, are very distinct or in any way materially better or more beautiful than the wild tree.

The Silver Maple is a valuable tree in ornamental planting only when it can be placed in deep, rich and moist meadow-land or by the banks of streams or lakes over which it can spread its long and graceful branches and display the beauty of its brilliant foliage. Its beauty as a meadow-tree is shown in the illustration on page 140, which represents a young planted tree, fifty or sixty feet in height, growing near Boston.

The Value of Good Roads.

IN the issue of this journal for December 17th and 24th, 1890, we gave some extracts from the report which Mr. J. B. Harrison, one of the Forestry Commissioners of New Hampshire, was about to present to the Legislature. These extracts set forth the value and functions of mountain-forests in relation to climate, soil and water-supply, as well as their use in furnishing beautiful scenery as an attraction for summer tourists. The broad prospects among the New Hampshire hills, as well as the pure air and clear flowing streams, with the game and fish in woods and waters, are just as truly natural wealth and sources of revenue as are fertile soil and abundant water-power. They invite summer travel, as similar attractions draw thousands of tourists every year to Norway and Switzerland. These resources, neglected as they are, brought visitors into New Hampshire in the year 1889 who left five millions of dollars in the state. If a genuine effort were put forth to heighten these attractions and make them available, there can be no doubt that these summer visitors could be increased manyfold. For the full utilization of these advantages good roads are essential, and on this point the Commissioners make some recommendations which we quote from the published report:

If we had in our mountain regions as good roads and paths as have been constructed in European countries, whereby more of our mountain scenery could be brought to view, and more of our mountain passes, ravines, gorges and lakes be rendered accessible to the tourist, which are now known only to sportsmen, searchers for timber, and the bold climbers of the Appalachian Club, the large revenue from summer tourists might be doubled, quadrupled, or increased indefinitely. This great interest urgently calls for better roads and paths than it now has, and for more of them, so that in time every mountain pass shall be accessible by a good highway, and every important lake and summit, and other place of special interest, can at least be reached by an easy foot-path or bridle-path.

This opinion has a basis other than that of mere sentiment. It rests upon the more solid ground of profitable utility. If properly constructed and cared for, such roads and paths would prove as remunerative as our average highways. When completed they would afford, in connection with those now in use, circuitous drives of great attractiveness, opening new areas to the lumberman, and new sites for mountain houses, and influencing summer visitors to prolong their sojourn in the state.

If such highways were carefully projected and gradually constructed, at the rate of a few miles each year, their cost would not be burdensome, and they would eventually make known to the world the scenic treasures of our mountain region, many of which are still unknown and inaccessible to tourists. In these attractions New Hampshire has natural resources possessing a cash value as real as that of her waterfalls or her soil; resources which she can and should develop for the benefit of the thousands of summer visitors who annually come within her borders, and for the pecuniary advantage of her own people. The last Legislature made seventeen different grants of money to aid in the construction and maintenance of public bridges and highways, mostly in the mountain regions, amounting to $20,700. It is important that there should be system and foresight in the expenditure of such appropriations. The Swiss and Norwegian roads, so inviting to tourists, have been planned with much care and built with great thoroughness. Their surfaces are hard, their grades are easy, and they are, in all respects, pleasant and safe for travelers. Thus made, they are more expensive at first, but in the end they are more economical, as well as much more satisfactory in use, than the mountain roads to which we are accustomed in New Hampshire.

Memorial Trees.

ELEVEN years ago a man who had watched with great interest the development of Cornell University from its very beginning intimated his desire to present to it some memorial to express his interest and love for the institution. He had not the wealth, by means of which others had enriched it with costly buildings, but he appreciated the beauty of trees, and he conceived the idea of manifesting his love for the University by planting a row of Elms along the eastern avenue of the campus. He was enabled to carry out his generous purpose, and the trees are already attaining noble proportions. The giver has passed away, but the gift promises to remain for many a year, a living witness to his generous spirit. At either end of the long line is a firmly bedded stone, upon which is chiseled the simple inscription, "Ostrander Elms. 1880."

May not this example stimulate other public-spirited citizens to adorn their town-squares or village-streets with beautiful and unobtrusive memorials of this character? In what more delicate and permanent form can a man of moderate means express his appreciation of the beautiful in nature, and his desire to bless those who are to come after him?

Recent Botanical Discoveries in China and Eastern Burma.—V.

REHMANNIA.—An examination of the copious specimens of this ornamental genus, collected by Dr. Henry, led to an increase in the number of species, including two described for the first time, and the raising of *R. glutinosa*, var. *angulata*, of Oliver, in Hooker's "Icones Plantarum" (t. 1589), to specific rank. At the same time the forms are so numerous that *R. glutinosa*, *R. angulata*, and what I take, from the description, to be *R. Piasezkii* of Maximowicz, are not quite satisfactorily definable from dried specimens; and I am doubtful whether I have correctly referred *R. Chinensis*, as figured in the *Botanical Magazine* (t. 3653) and in the *Botanical Register* (t. 1960), to *R. glutinosa*. A comparison of the two figures cited reveals considerable difference in the coloring, which is of a kind that recalls the American genus Salpiglossis, of which it is no very distant relation. The plants figured differ from the wild dried specimens from north China in having more decidedly leafy flowering-stems—a result, probably, of cultivation. Both *R. angulata* and *R. Piasezkii* are usually taller-growing plants than *R. glutinosa*. Among the specimens referred to *R. Piasezkii* are some between two and three feet high, and, judging from their vigor, this species probably reaches as much as four feet in height under favorable conditions. On the other hand, it is sometimes reduced to a single flower; yet that flower is larger, with a wider corolla, than in any of the specimens of *R. glutinosa*. Some of the specimens are described as having white flowers, but one from the Ningpo District is said to have magenta flowers and to be an exceedingly showy plant. In shape and size—three inches long—the flowers remind one forcibly of those of *Lophospermum scandens*. *R. angulata* differs in the lobes and teeth of the leaves being pointed instead of rounded. The flowers are variously colored—red, scarlet and orange being combined in the same flowers. A very pretty plant of this affinity, which I have doubtingly referred to Rehmannia, and called Oldhami, after its first discoverer, comes from Formosa, where Mr. W. Hancock collected good flowering specimens in 1885. He found it growing on dripping rocks under the shade of coarse vegetation. It has light-colored flowers (judging from dried specimens only) with dark blotches on the lobes, and in size and shape they are much like those of a medium-sized Pentstemon. Finally, there is a remarkable new species which I have described under the name of *R. rupestris*, in allusion to its natural place of growth on the face of cliffs or rocks. It has been raised at Kew from seeds sent home by Dr. Henry, and it has been drawn for the *Botanical Magazine*, so its characteristics will soon be familiar to persons who see that periodical. *R. rupestris* differs conspicuously from the other species in the thick leaves being clothed with a thick, white, woolly felt, which was strongly developed in the cultivated plant. In a pot it assumes a curious habit, putting forth thick fleshy branches which take a downward direction, concealing the pot. The yellow flowers of the cultivated plant were not so showy as those of the other species; but one of the specimens is said to have had pink flowers. The Chinese name signifies "cliff-cabbage," given to it probably on account of the large rosette formed by its broad radical leaves. From the foregoing notes it is manifest that the genus Rehmannia merits the attention of the gardener.

CALORHABDOS.—A somewhat lengthy name, signifying beautiful rod, given first to a single Himalayan species; and now five Chinese species are known, from dried specimens at least. I am not aware that any species of Calorhabdos has ever been cultivated, but should they prove hardy, they are promising plants for introduction in shrubberies and half-shaded situations. Botanically, they are closely related to the Veronicas; in habit, they are mostly like the trailing *Vinca minor;* and four out of five of the Chinese species have the small white, pink, red or purple flowers crowded in short, catkin-like spikes, borne in the axils of the usually thick, cordate or lanceolate, toothed, alternate leaves. A figure of *C. latifolia* is given in the "Index Flora Sinensis" (*Journal of the Linnean Society*, xxvi., t. 4), which will afford a better idea of the type of plant than a long description. One of the Chinese species, *C. axillaris*, also inhabits Japan, and should be easily procured.

PAULOWNIA.—The last member of the *Scrophulariacæ* I have to mention is the arboreous *Paulownia Fortunei*. This is not absolutely new to science, having been described by Seemann as long ago as 1867, from imperfect specimens collected by Robert Fortune, to whom we are indebted for so many beautiful plants from the far east. Seemann had only a portion of an inflorescence, bearing three or four flowers, and may therefore be excused for having referred it to the *Bignoniaceæ*, under the name of *Campsis Fortunei*. There are two such specimens in the Kew Herbarium; one bore Seemann's name, and the other was labeled *Paulownia imperialis*. With ample specimens from the two distant provinces of Kwangtung and Shantung, collected by the Rev. B. C. Henry, an American Missionary, and others, it was at once manifest that we had to do with a second species, differing from *P. imperialis* by its much elongated, cordate, almost caudate leaves, glabrous and smooth on the upper surface, and clothed with a very short, dense, white felt on the under surface; and in the longer, more curved flowers. It is described as a tree twenty feet high, and would, probably, flourish better in North America than in England, where there is usually not sufficient sunshine to ripen the wood.

Kew. *W. Botting Hemsley.*

The Arborescent Yuccas of California.

THE genus Yucca is represented in California by three species, neither of them, however, peculiar to the state. Indeed, they are the most northerly outliers of the genus, which has its greatest development in northern Mexico.

Two of the three attain to the size of trees, *Y. brevifolia* being the largest. It is wholly confined in California to the Mojave desert, of whose peculiar and interesting flora it is the most conspicuous member. On the north its limit is defined by the Tehatchipi Mountains, while the San Bernardino range confines it on the west. South and east its range extends beyond the boundary of the state to the valley of the Virgen, in south-western Utah, and to the Colorado plateau of Arizona. All this great district is a parched desert, and here at elevations of from 3,000 to 5,000 feet above the sea, on gravelly slopes and mesas, *Yucca brevifolia* finds a congenial home. Intermixed with a scrubby Juniper (*J. occidentalis*), it covers many hundred square miles with straggling forests, whose gaunt aspect makes even more cheerless the arid and desolate region they occupy.

The trees reach the height of twenty, and even thirty feet, with a trunk diameter of over a foot. The upper third of the trunk is furnished with a number of contorted branches, which form an irregular and often grotesque head. The leaves are about eight inches long and half an inch wide, rough and very rigid, the edges serrulate, and the extremity armed with a spine. Only those at the ends of the branches show by their ashy green color that the tree is living; the older ones are closely reflexed to the branches and bleached by the sun. The lower portion of the trunk is bare and brown.

Although this tree was noticed by Frémont in 1844 it was thirty years later before its flowers were made known. These were first observed by Dr. Parry in 1874 in southern Utah, and described by him in the *American Naturalist* for March of the succeeding year.

They are produced near the ends of the branches in short and rather dense, sessile panicles. The perianth has none of the grace and elegance characteristic of the genus. The texture is thick and leathery, the color dirty white, and the narrow segments are confusedly crowded. A disagreeable odor adds to the unattractiveness of the flower. April or May is the time of flowering, according as the season is early or late.

The fruit is dry, with a somewhat spongiose pericarp, the withered remains of the perianth persisting at the base. Good specimens are four inches long and nearly two in diameter. Although truly indehiscent, the ripe fruit manifests a tendency to the capsular structure by the replacement at what would be the dissepiments of the thick texture of the pericarp by a thin membrane, which occasionally splits. They are opened here by birds, which are perhaps in search, not so much of the seed as of the larvæ which abundantly infest them.

The seed has the black color and the flat, orbicular shape common in the genus. They are about a quarter of an inch in diameter and a line thick. The tree apparently produces its flowers every year, but is very irregular in perfecting its fruit, which is abundant in some seasons, but in others is an entire failure throughout large districts. In 1876 I traveled many miles through the Yucca-forests of the Mojave, finding but a single group of less than a dozen trees which had produced fruit that year.

The wood is coarsely fibrous, and is without any present economic value. It was at one time thought to be available as a material for paper fibre, and a factory was built in the desert, where it was prepared for shipment to England to be used for that purpose. The enterprise was apparently unsuccessful, and was soon abandoned.

In Utah this tree is called the Joss, Josh or Joshua, a name probably given it by the Mormons, and the meaning and

derivation of which are alike unknown. It is more properly known in California as the Tree Yucca. It has nothing to recommend it for cultivation, and does not succeed even in the San Bernardino Valley, only a score of miles from its native home.

Yucca baccata, the second arborescent species of the state, shares with several others the popular name of Spanish Bayonette. The territory it occupies includes the region to which *Yucca briarfolia* is confined, and extends beyond it both east and west. In the former direction it reaches well into Texas, while in the latter it extends over most of the four southern counties of California. With this wider territorial range it also flourishes under a greater diversity of altitude and climate, but is, withal, strictly confined to the zone of aridity. It is reported to form extensive open forests in some parts of Texas; but this is not the case in California, where it is solitary, or, at most, in small groups. It reaches its best development in the deserts, both as respects size and numbers. The trunks are either single, or two or more form a common base, and are from five to fifteen feet high and a little over six inches in diameter. The branches are few and short, and, like the trunks, clothed with the dead and reflexed leaves. Only those at the extremities are living, as is the case with most tree Yuccas. The leaves are two or three feet long and nearly two inches in width, and have on their edges a few coarse loose fibres. Sometimes the plant is acaulescent, but, perhaps, never truly so in mature specimens.

The flowers are produced in the month of March, or even earlier, near the ends of the branches, in a nearly sessile, broad panicle. They are large, campanulate in shape, of a white color, often shaded with purple, and of a peculiarly wax-like texture. They are very beautiful, either when seen in mass or more closely examined as individuals. Thus examined, they are found to derive an added elegance from the thick, snow-white filaments and ovary, the former tipped with bright yellow anthers, and the latter with the green stigmatic appendages.

This Yucca seldom ripens its fruit in this region. It is baccate in structure, cylindrical, and four or five inches long when mature. It is said to be sweet and edible. The Indians obtain a coarse fibre by macerating the leaves, which they use to manufacture mats and cordage. In time it may come to be utilized by civilized man for similar purposes. Although producing a beautiful flower and growing readily in cultivation, it has little value for that purpose, because of the extreme slowness of its growth—many years, probably, being necessary for a plant to attain a blooming size. *S. B. Parish.*

Plant Notes.

The Fruit of Akebia quinata.

THE handsome and hardy Japanese climbing plant, *Akebia quinata*, has become common in our gardens, where it is admired for its abundant dark green, digitate leaves, which are peculiarly noticeable in the late autumn and in the early winter, as they remain on the stems with little change of color until long after nearly all other deciduous plants have lost their foliage; and for the abundant and curiously formed rosy purple flowers. But very few people in this country or in Europe have ever seen the fruit of the Akebia or realize what a beautiful object it is. The illustration on page 137, made from a specimen which was produced last year in the Arnold Arboretum, will give an idea of the shape and size of the fruit, but will not, unfortunately, convey any idea of the beauty of its color.

The flowers of Akebia are unisexual, but are produced together in the same pendulous raceme. The females, which vary in number from one to three on each raceme, are borne on long, slender pedicels from its base, and are two or three times as large as the males, which are more numerous and are collected together on very short pedicels at the apex of the raceme. The long stems of the female flowers cause them to hang with or below the males an arrangement which seems admirably suited to insure their fertilization by pollen carried from the adjoining male flowers, either by the wind or by insects. But, for some reason or other, fruit is very rarely produced and only on certain individual plants which continue fruitful year after year, while other plants growing with them under exactly similar conditions remain barren. In 1864 *Akebia quinata* produced fruit with the aid of artificial fertilization in the arboretum at Segrez, in France, for the first time it was claimed in Europe, and a figure of it was afterward published by Monsieur Lavallée in his *Arboretum Segrezianum* (t. 28).

The first record of this plant having fruited in this country appeared in the *Gardeners' Monthly* in 1876 (xviii., 324), where it is stated that one of the two plants placed a few years previously by Mr. William M. Canby, of Wilmington, Delaware, in front of his house had produced fruit. Two years afterward fruit appeared on a plant in the garden of Captain H. D. Landis, at Chestnut Hill, near Philadelphia (*Gardeners' Monthly*, xx., 326); and plants are known on Long Island which have fruited every year for a number of years, and the fruit has been exhibited at the county fairs on the island, as I have been informed by Mr. William Falconer, of Glen Cove, who sent the fruiting plant to the arboretum. It is part of a plant in Mr. Charles A. Dana's garden, and was obtained by division. It is interesting that the fruitfulness of this individual appeared the year it was planted in the arboretum. Mr. Canby writes: "There are two Akebia-vines growing over the porch in front of my house; they have been there for nearly twenty years, and have had more or less fruit on them every year from the time they were well grown until this last year, when the flowers were destroyed by the late frosts. Very frequently there is no fruit, but usually each vine has from half a dozen to twenty each year. The baccæ which develop are most frequently one, often two, less commonly three or four, and rarely five. In the latter case, when they become ripe and open, the whole object has a striking appearance.

The fruit of Akebia is technically a berry or a collection of berries, slightly joined at the base, each developed from a free ovary. The individual berry is oblong, four to six inches long, cylindrical, and not unlike the fruit of the Papaw in shape. It is dark purple, mottled with a beautiful shade of blue, and covered with a glaucous bloom. The flesh is thin and dry, and splits open when fully ripe on its inner face, disclosing a fleshy placental mass of semi-transparent whitish pulp, in which the showy black oval seeds are imbedded in great numbers. This is attached at the back by a line following the dorsal suture, and in drying rolls up. The cylindrical, pulpy mass is the edible part of the fruit, and is eaten in Japan; it is insipid, however, and not very palatable, and Akebia-fruit will probably never be valued in this country except as an ornament. It is, however, so very showy that nurserymen should take advantage of the fruit-producing tendency of certain individuals and propagate from them rather than from those which are not fruitful. *C. S. S.*

Some Recent Portraits.

FIGURES of the cone and foliage (t. 7162, 7163) of *Encephalartos Altensteinii* open the March issue of the *Botanical Magazine*. This is a noble south African species said to become sometimes arborescent. The orange-brown cone produced in the garden of Mr. W. H. Tillett, of Norwich, described as eighteen inches long and thirty inches in circumference, is extremely ornamental, as is the habit of the plant with its graceful pinnate leaves.

Two species of Masdevallia are figured in this issue, *M. macrura* (t. 7164) and *M. punctata* (t. 7165). The former is a discovery of Roezel's in New Granada, and was described many years ago; the flowers are purple on the exterior, orange or yellow within, and remarkable for the presence of prominent nerves covered with numerous dark purple warts in the interior of the perianth. The narrow yellow tails of the sepals vary from four to six inches in length. *Masdevallia punctata* is a small plant with small orange-brown flowers, and is most nearly allied to *M. swertiæfolia*, belonging to a small group of the genus in which the lip is superior. The native country of this plant is unknown, although it is supposed to be from the mountainous regions of New Granada. The remaining plate is devoted to *Clematis Stanleyii*, already figured in our columns.

A fruiting branch, with figures of the scales and a section of the leaf of the beautiful *Abies religiosa*, accompanied by a

portrait of a small tree growing in England, appears in the issue of the *Gardeners' Chronicle* for March 7th. This is the Mexican Fir-tree, through the forests of which travelers visiting the city of Mexico by rail now pass near the summits of the mountain ranges which are crossed before the valley of Mexico is reached. It is a very beautiful tree, but, unfortunately, is not hardy in the northern and eastern states. It might be expected, however, to flourish in California, and it would be interesting to know if any large specimens already exist there. The specific name given to this tree was selected because the Mexicans are fond of decorating their churches with its branches.

The colored frontispiece of the March number of the *American Garden* is devoted to a cluster of fruit of *Akebia lobata*, and serves to illustrate the third number of Professor Georgeson's instructive papers on the economic plants of Japan. *Akebia quinata* is well known in gardens, but this second species, for some unexplained reason, appears never to have been introduced into those of America or of Europe. Its home, Professor Georgeson tells us, is in the

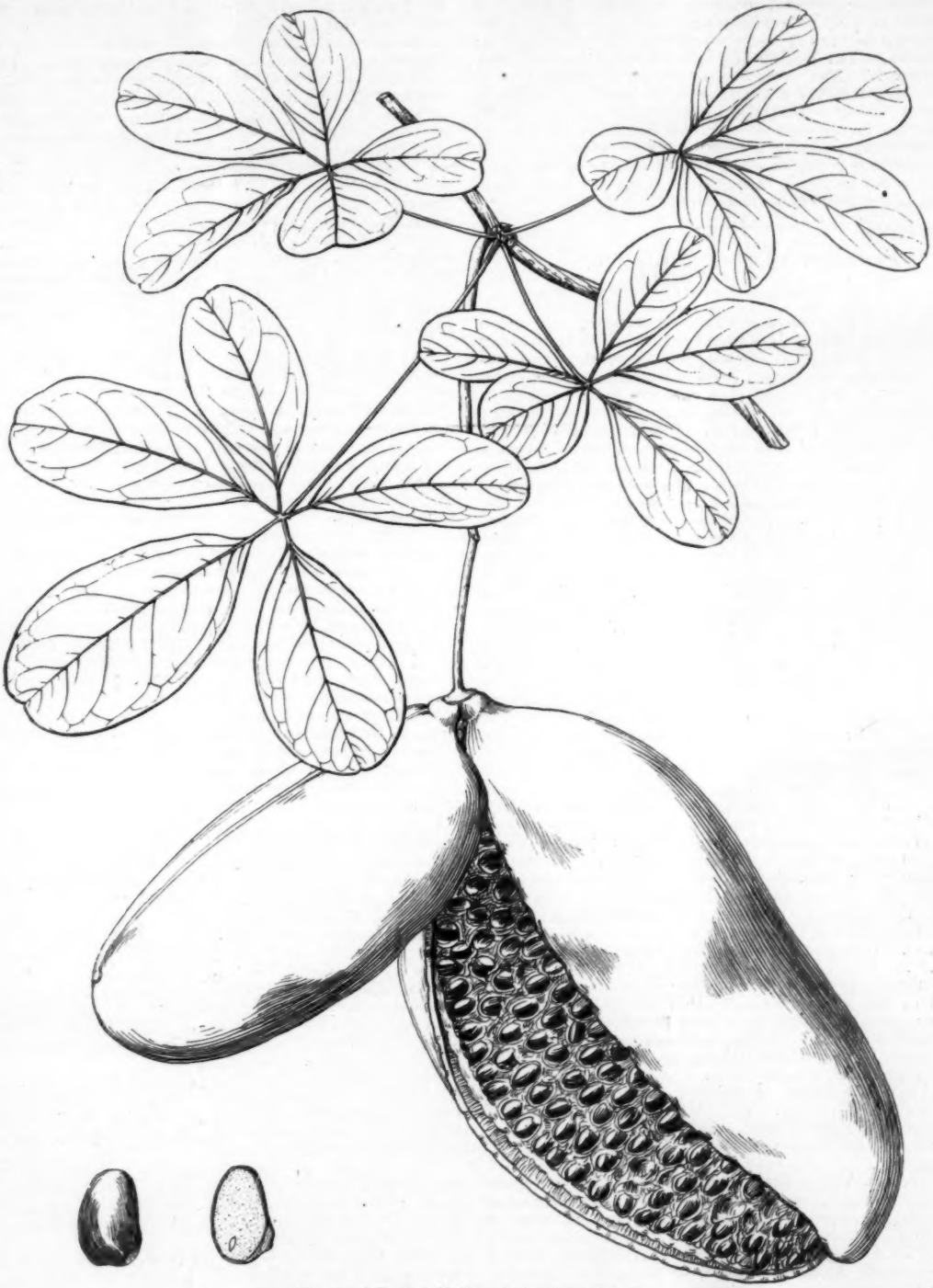

Fig. 25.—A Fruit of Akebia quinata.—See page 136.

mountains of northern Japan. It might, therefore, be expected to prove hardy anywhere in the United States. "It is," he says, "a more rapid and vigorous grower than the former species. I found some very fine vines of this kind in the lower mountains in the northern part of Iwati prefecture, which is well up toward the northern point of the main island. One vine especially attracted attention by its size and load of fruit. It grew in a spot of rich soil, mostly leaf-mold, by the side of a spring in the edge of a wood where it rambled over a thick growth of tall bushes and small trees, within an area of a square rod." As this plant was known to Siebold who, with Zuccarini, published a figure of it in the Flora of Japan, it is certainly curious that the horticultural collectors who have ransacked Japan so thoroughly of late years have failed to send home any seeds of a plant which, if we are to judge of its value by that of its relative, is likely to be of first rate importance in our gardens, especially if it proves more fruitful than the better known *A. quinata*.

Foreign Correspondence.

London Letter.

Lindenia.—It is now six years since this monthly publication was started by the Messrs. Linden, of Brussels. It is devoted exclusively to Orchids, of which 272 pictures, mostly well executed, have already appeared. An English edition has been started this year, of which part II. has lately been published. With such powerful and established competitors as Warner and Williams' *Orchid Album* and *Reichenbachia*, besides *The Garden* and the *Botanical Magazine*, Messrs. Lindens' venture will have to be smart to succeed in England. Certainly nothing could be better than these first two parts, both with regard to the excellence of the drawing and colors of the plates and the interest of the letterpress. Orchidists are to be congratulated upon the number and quality of the periodicals now devoted to illustrating and describing all the best garden Orchids. The plants figured in the parts of the English *Lindenia* already published are as follows: *Cattleya Rex*, which is supposed to be a white-petaled *C. Dowiana*, and which is a most beautiful plant, is represented in the plate; *Cochlioda Noezliana*, a delightful Orchid, similar in habit and flowers to *C. vulcanica* (better known as *Odontoglossum vulcanicum*), differing in having bright scarlet flowers, with a purple-tipped column. I may note here that at the auction sale to-day the plants of this Orchid offered by Messrs. Shuttleworth & Co., although small and newly imported, realized as much as ten guineas each; *Peresteria aspera*, shown as having the pseudo-bulbs of *P. elata*, and a short, drooping raceme of fleshy, cupped flowers, not unlike those of *Acineta densa* in size and shape, but colored tawny yellow, with numerous reddish spots. *Cattleya Warocqueana*, var. *amethystina*, the flowers of which are as large as those of the largest *C. gigas*, and colored deep purplish rose, with a large amethyst-colored lip, deep yellow in the throat; *Catasetum saccatum* is beautifully figured, and is described as "a splendid species, one of the largest of the genus. The sepals are over two and a quarter inches long, marbled and almost suffused with purple brown on a light-green ground. The petals are a little shorter and similar in color. . . . The lip is a remarkable organ, three-lobed, strongly fimbriate, green suffused with brown, white round the mouth of the saccate spur." *Cattleya granulosa*, var. *Buyssoniana*, remarkable for its uniformly cream-yellow sepals and petals and its white and crimson labellum. *Odontoglossum Clœsianum*, a large-flowered form of *O. crispum*, with numerous large, red-brown blotches. It is described as a probable natural hybrid between *O. crispum luteopurpureum*, but on what ground is not clear. The eighth plate represents a pretty mass of the elegant little *Phalænopsis Lowii*. Except the Phalœnopsis, all these plants are the introductions of the Linden Company.

Horticultural Appliances.—At the Crystal Palace, Sydenham, an exhibition of considerable interest to gardeners was opened on the 3d, and will continue till the 31st of March. It is devoted to greenhouses, heating apparatus, various tools—in fact, to all kinds of garden furniture and machinery. On the whole the exhibits do not comprise anything of exceptional novelty for the professional gardener or well-informed amateur. Nevertheless, it cannot but prove useful to the thousands who daily visit this popular resort, and who are more or less interested in garden work, but are ignorant of the latest improvements in the way of tools and garden appliances generally. For this reason exhibitions of this kind are desirable wherever horticulture is general.

Lilium Harrisii.—The Bermuda Lily has become of enormous importance to flower-growers in England. The market-gardeners in the London districts alone import millions of it yearly. In one nursery some hundreds of thousands are planted every year, and are treated so as to come on in batches, so that the flowers are available from March to October. In Mr. Iceton's nursery at Putney I saw lately house after house filled with this Lily, while in frames and beds were many thousands more in various stages of growth. The bulbs had been planted singly in five-inch pots in strong loam. The stem on each bulb of the many thousands which will open their flowers in about a fortnight, so as to be ready by Easter, was as thick as a man's thumb, from four to five feet high, leafy down to the base, and crowned with a cluster of plump buds. I counted the buds upon many of the stems, and found the average to be six flowers per bulb. With the market-growers it does not pay to attempt to use the bulbs of this Lily a second year; they are therefore sold for a mere song or destroyed after having flowered. The three Lilies generally grown by the London market nurserymen are *L. candidum*, *L. eximium* and *L. Harrisii*. Grown as Mr. Iceton grows them—at first plunged in fibre or ashes outside, then removed to unheated frames, and from thence to warm, moist, light houses, where they stand pot thick, their roots saturated, their heads almost touching the glass—they are an immense success.

Kentias.—The most popular decorative Palms in England are the several species from Lord Howe Island, which were originally described as Kentias by Mueller, and subsequently altered to Howea by Beccari. In gardens, however, they are still generally known as *Kentia Forsteriana* and *K. Belmoreana*. Besides these names there are *K. Mooreana*, *K. rupicola*, and *K. australis*, but the plants in gardens which bear them appear to be merely varieties of one or the other of the two first named. These are grown in hundreds of thousands by London nurserymen, and are sold in all sizes, from plants a foot high in three-inch pots, to big specimens fifteen feet high. They are superior to most other Palms, from the fact that their leaves are not easily injured, and they remain on the plants for many years, so that a specimen fifteen feet high often still retains the leaves which it had when small. They are not injured by being huddled closely together, so long as they get plenty of moisture and warmth. This gives them great value as plants for temporary decoration, and their seeds are now imported by the hundredweight, many of them being disposed of at the auction rooms.

There exists some confusion among growers with respect to these two fine Palms, many being of opinion that they are merely varieties of one species. The following extract from a report on Lord Howe Island by Mr. J. Duff, of the Sydney Botanic Gardens, may throw some light upon the matter. He says:

"Baron Mueller, in the fifth volume of his 'Fragmenta,' describes four distinct species of Palms indigenous to Howe Island, while Mr. Bentham, in the 'Flora Australiensis,' only enumerates three species, stating that he finds 'no difference in the male flowers and fruit of *K. Forsteriana* (the Thatch Palm) and *K. Belmoreana* (the Curly Palm), and that their distinctness remains to be ascertained.' Both Palms flower exactly alike, *i. e.*, they produce their flower-spikes generally from the axils of the lowest row of leaves, but occasionally young, undeveloped flower-spikes spring from the axils of the leaves above them. The seeds [fruits] of the Curly Palm are oval and a greenish yellow color when ripe, while those of the Thatch Palm taper to a point at both ends and are dark crimson when mature.

"The chief specific distinctions, however, are: The Curly Palm bears its flower-spikes singly, which average five to six feet in length, while those of the Thatch Palm consist of five spikes in a row, united together at the base, of an average length of three to four feet.

"The fronds and pinnæ of the Curly Palm are recurved at the apex and the pinnæ are nearly erect at the base, the Thatch Palm having less recurved, darker green fronds and broader, pendulous pinnæ, which distinctions are observable even in the small seedling plants.

"The Curly Palm is the most abundant and wide-spread species, as it extends from the beach to an elevation of about 1,200 feet, while the Thatch Palm is confined chiefly to the beach.

"At an elevation of about 1,000 feet the large Mountain or Umbrella Palm (*Kentia Canterburyana*) is met with growing in patches from this height to the summit of the mountains, to which the small Mountain Palm (*K. Moorei*) is also confined."

It is remarkable that these Palms, which are wild only in this small island, should prove under cultivation so indifferent to treatment as to grow under all sorts of conditions, if only they can obtain heat and moisture.

London. *W. Watson.*

Cultural Department.

Rose Notes.

THE season about to close has not been satisfactory to most of those who grow Roses for cut flowers; there have been many failures, and in many instances the failures are unaccountable. Careful growers, as well as careless ones, have been tried to a greater or less extent by the failure of some variety or varieties to come up to the high standard of excellence now generally established. Of course some of these losses may be directly traced, as usual, to either overfeeding or overforcing. An instance of the latter I observed a few weeks since, when a house of Brides, that in the early part of the season had been very promising, was apparently struck all at once by disease in the form of the "yellows," and at the time of my visit most of the foliage had turned nearly the color of the Golden-bedder Coleus, and, of course, the house was completely ruined either for flowers or for stock. In this case it was plain that the house had been kept too warm in order to hasten the flowers for the holiday trade, and it therefore seemed reasonable to infer that this caused the sudden breakdown of the plants some six weeks later.

The growers of early hybrids, too, seem to have had their full share of misfortunes, for many of the early crops were not nearly up to the standard. Mrs. John Laing and Ulrich Brunner continue to retain their popularity, some very fine blooms of the latter having been in market for weeks past. The early Mrs. Laings were not remarkable, many of them being more or less malformed, but really good flowers of this variety were always in demand.

Captain Christy is a hybrid Tea that should be more widely grown, for when in good condition its good size and its exquisitely tinted flowers of delicate flesh color are highly attractive. Unfortunately, Captain Christy is a somewhat shy bloomer when forced, but still a few such flowers as we sometimes see, cut with stems eighteen inches to two feet in length, will well repay for the space and trouble they require.

Another old Rose that deserves attention is Maurice Bernardin, a seedling from General Jacqueminot, and sent out some thirty years ago. It is bright crimson, of good size, and also a free grower and bloomer. Maurice Bernardin forces very well, too, but has the disadvantage of blooming in clusters frequently, and it therefore becomes necessary to disbud in order to secure good flowers when forced. As an out-door Rose this variety is a very satisfactory one, the color being very fine.

Eugénie Verdier is also a good out-door Rose, its silvery pink flowers being of good shape and size, and the shade of color is a very pleasing one.

Since the novelty has worn off Duchess of Albany does not seem quite as popular, and, though a lovely Rose when in perfect condition, yet this variety certainly has not displaced La France, and in many instances the experience of the florists during the present season has been that they could sell two La France roses for every Duchess of Albany they disposed of.

Good flowers of Madame Hoste have been in demand, and, generally speaking, this has proved a useful Rose; and it is a prolific one, too, though the flowers are to a great extent produced in crops, and the foliage seems quite susceptible to mildew.

The old stand-by, Bon Silene, has also been much used in some cities this season, and while it cannot compare in the matter of size with some of the newer introductions, still the color is attractive, and when well grown it makes a charming corsage bouquet.

The most noted new Rose of American origin, Waban, is finding a ready sale among the trade, the stock prepared for the first delivery (April 15th) being now exhausted, and orders are being booked by the agents for a second delivery, which is promised to take place May 15th. This Rose has already been described in the columns of GARDEN AND FOREST, but it may be well to repeat that it is a sport from Catherine Mermet, much deeper in color than its parent, and in growth and habit very similar to that well-known variety. It originated in a florist's establishment in Massachusetts, and is being simultaneously distributed by several wholesale agents in various parts of the country.

Young Roses for future planting should now be growing freely, and should not be allowed to become starved for want of repotting. A stunted condition is often invited by a little neglect in this essential, and once in such a condition it is hard to get the plants out of it. Thorough syringing will also be required every bright day, for the sun is now strong and evaporates much moisture in the day. Pot-grown hybrids will take an abundance of water, and applications of liquid manure from time to time will increase the size of the flowers and general vigor of the plants.

Plants of this class are now much used in decorations, Anna de Diesbach and Magna Charta being two favorites for this purpose, while the well-known hybrid China, Madame Plantier, is also used with charming effect, its pure white flowers being produced in great abundance. The latter variety, however, needs to be brought on slowly in order to secure the best result, for when forced hard the flowers have very little substance.

The pruning of out-door Roses should not now be postponed, as it should be done before the sap rises.

Holmesburg, Pa. *W. H. Taplin.*

Hardy Narcissus.

IN English gardening periodicals the complaint is now current that bulbs of Narcissus, planted in the open ground late last fall, have been kept perfectly dormant all the winter owing to the unusual severity of the season, and fears are expressed for the crop of bloom and welfare of the bulbs, owing to insufficient root action. Although this is a complaint of English growers alone, still we may gather some useful hints from it which may help us when planting time comes again. It is perfectly safe to say, that as soon as the value of a permanent bed of out-door Narcissus is generally recognized these charming spring bulbs will be planted in large quantities. But failure, or partial failure, is almost sure to confront the cultivator in the first attempt unless certain precautions are taken at planting time, and of one of these precautions the complaint referred to forcibly reminds us. Nine-tenths, perhaps, of the Narcissus planted each year are newly imported bulbs, for which we have to depend upon dealers who get them with their other bulbs in fall, and by the time these get to the planters the season is far advanced and sharp frosts are upon us, rapidly robbing the soil of its store of warmth laid up during the summer. Such was my own experience last fall when planting an extensive permanent bed of Narcissus in the open ground. Fortunately the difficulty was foreseen, and, after planting, a covering of twenty-four inches of dry leaves was placed over the whole bed, and it was scarcely completed before snow was upon us, and hard frosts. It was a long time before the thick blanket of leaves was wet through, and consequently the soil did not freeze, and an examination to-day proves that the growth made by the bulbs is ample at the root to support the leaves and flowers when the time comes for them to appear. There is no doubt that the covering of leaves served as a protection from cold above and prevented the escape of warmth from the soil. As soon as the weather permits the covering will be carefully removed and the bulbs will be in flower a very short time after, as they are now pushing through the soil.

There is one other way to ensure success with a new planting, and this is by obtaining American-grown bulbs. In this way the beds may be planted as early as the middle of July, and better at that time than later, for, owing to the strong sunshine, the foliage will have already turned yellow, and root action will have ceased. This action begins again, however, about the end of August, and it would be better to buy imported bulbs than home-grown ones lifted after the roots have commenced to grow, as the best roots and the principal feeders would be injured beyond help by removal, and a second start would have to be made at the expense of the vital forces stored up in the bulb.

To a beginner the difference in shape and size of home-grown Narcissus bulbs and imported ones is perplexing; the latter have very short necks, while of those grown here such kinds as Sir Watkin and Horsfield's often have necks that make the bulb measure six inches in length; this is brought about by the different systems of planting. Our climate makes it necessary to plant much deeper than is the custom in Europe. If we planted as shallow here the plants would be above the soil in fall, owing to the much greater heat here at that period.

As already mentioned, our planting is intended to be a permanent one. And in summer, plants of annual duration will be planted between the rows, such as Mignonette, Asters and other kinds for cutting, and in fall, when the first sharp frosts have killed these, the beds can be cleaned and a good top dressing of well-decayed manure spread on them. The

heavy fall rains will wash this down to the roots and nourish them when they are most in need of help. It will be found necessary every third year to lift, separate and replant the bulbs, owing to the rapidity with which they multiply. In heavy soils the bulbs would soon become so cramped in the soil as to render them flowerless owing to imperfect development, but in lighter soils this would not be so likely to occur. There should be no excuse for a scarcity of Narcissus-flowers in gardens, when it is well understood how perfectly they are adapted for permanent planting, either for naturalization or for the decoration of flower-beds and borders. With a proper selection of varieties they can be had in the open ground from Easter onward for six weeks. The earliest kinds might be so planted that the protection of a frame could be given, and in this way Easter flowers might be assured even in late seasons, but last year there were plenty in the open ground from newly planted bulbs without the least protection.

South Lancaster, Mass. *O. Orpet.*

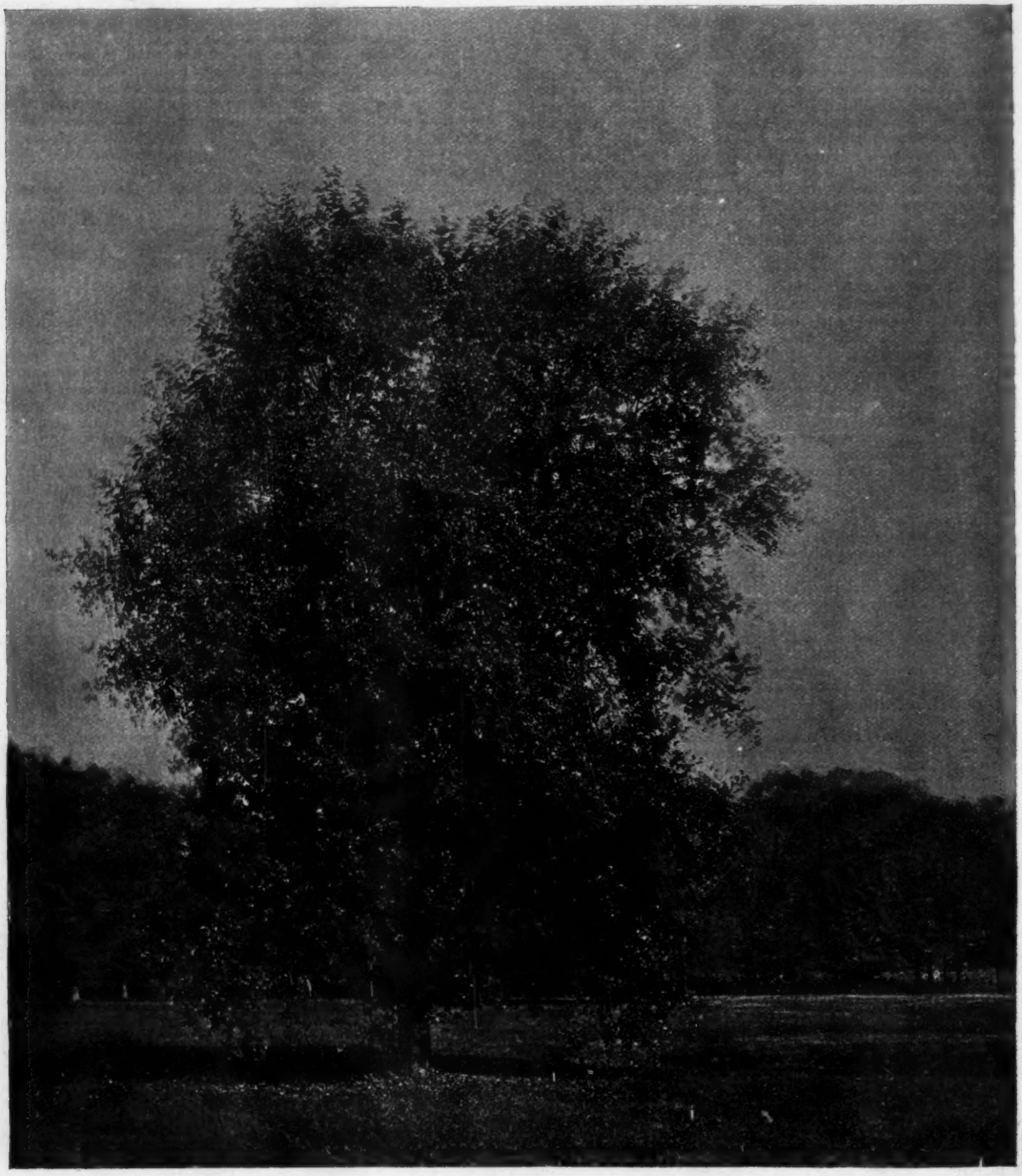

Fig. 26.—The Silver Maple.—See page 133.

Spring Flowers.

MARCH is a month of anxiety in the hardy-plant garden. The losses usually noted at that time may be the result of hard conditions earlier in the year rather than the constant changes incidental to the month, but at this time we may usually first take note of the losses. With all the continued cold of the past winter the destruction among hardy plants seems less than during the previous much milder season. The few mild periods have started a large proportion of bulbs and hardy herbaceous plants into some activity, and the garden is full of interest. In selecting plants for the hardy garden care should be taken to secure as many as possible of an arctic habit, by which I mean those which spring rapidly into bloom in a few days after the frost releases its hold on the ground. The flowers of these plants are not only among the most beautiful and apparently delicate of any season, but there is a never-ending wonder and charm in their surprising annual appearance. They know their master, and when the sun rises but a trifle they rise to his greeting.

It adds much to the interest of a garden to discover at every mild time throughout the year at least a stray flower or two. Even in our latitude the frost is seldom so persistent that flowers may not be had out-of-doors in warm spots nearly every month in the year. December is usually the barest time, as the ground is then apt to be continuously frozen. This year Snowdrops were in bloom in January in the border, and are still in mid-season. *Anemone blanda* was a close second in February. These plants, I find, are very reliable winter-bloomers, and some established plants in a snug corner are very bright and charming on a sunny day. They range in colors from a not very clear white to a deep pure blue, and the foliage is deeply cut and of a bronzy hue. Some roots of *A. blanda alba* in a border only a few feet distant are only just now starting into growth, so much difference does location make in time of flowering. It would be well to plant *A. Apennina* with *A. blanda*, as this variety follows closely, and would extend the blooming-time of the bed several weeks. My colony of *A. blanda* had a good baking during the summer, and received a mulch in the fall. The latter condition seems important, as they are stronger where the mulch still covers them. From some indications, I am inclined to think that in well-drained soil under deciduous shrubs they would be quite at home.

A Taurian variety of *Scilla bifolia* is proving an excellent early Squill, quite as early as the Anemone. This has flowers of as deep a blue color as *S. Sibirica*, and the blooms are entirely weather-proof, as becomes an early riser. Another Taurian Squill has much larger foliage and of a more true blue shade. This, while scarcely later, is somewhat damaged by hard weather. Muscaris are showing their inconspicuous but lasting flowers, while Chionodoxas are slowly appearing, *C. Sardensis* being most forward. It is rather peculiar that a pan of these in a cold frame are not as forward in bloom as those in the open, though the foliage is more advanced. Winter Aconite (*Eranthis hymelis*) gives a cheerful glint of color, and a stray hardy Primula may be found, though the latter is scarcely a winter flower, like the double Daisy, *Bellis perennis*, which sometimes ventures out in a mild spell, for which temerity they are punished by the first sharp frost. Hellebores seemed such a success out-of-doors last season that mine were plunged in the border early in the year, but without much confidence that the result would change the opinion that they are cold-frame plants—in my garden at least. Looking them over the other day, I found the Lenten section quite ready to bloom, but the Christmas Roses (*H. niger*) entirely dormant, with buds still at the crowns. Perhaps your correspondents, who have bloomed them in the open so many years in succession, have garden conditions more favorable than mine to these desirable plants.

Elizabeth, N. J. *J. N. Gerard.*

Notes from the Harvard Botanical Garden.

SALVIA BETHELLII.—This excellent variety of *S. involucrata* was obtained from seed some years ago by the English gardener after whom it is named. In many respects it is superior to the species; the habit is more compact and bushy, the flowers more numerous, and of a richer color. No other Salvia flowers so persistently; no other presents such a neat, attractive appearance when in bloom. The entire plant rarely exceeds three feet in height, and it is furnished with dark green, velvety ovate-acuminate leaves, from six to seven inches long, on petioles one-third their length. The flowers are borne in a large, dense, pyramidal, verticillate, erect raceme, with two caducous, ovate bracts, of the same color as the corolla, at the base of each whorl. The corolla is a deep reddish crimson, two inches in length, tubular, flattened, contracted at the top, expanding again in a two-lipped limb, the upper lip densely hairy, and the lower one bearded beneath. Cuttings prepared from the young growth are very easily propagated with bottom heat. They should be rooted in spring, however, so that the plants may be grown in the open ground during summer. They should be taken up and potted in August, or early in September, and afterward treated as Chrysanthemums and other soft-wooded plants that are grown out-of-doors. *S. Bethellii* cannot endure the slightest frost, and it delights in a sunny position and a free circulation of air when under cover.

TETRANEMA MEXICANA.—This is a charming little perennial, scarcely more than six inches high. It was first cultivated in Belgium, some fifty years ago, and is the only member of a genus which is closely allied to Pentstemon. The stem is very short, and thickly clad with opposite, oblong, crenate leaves. The axillary peduncles, bearing the reddish purple flowers in dense corymbs, are produced freely during the summer months. Although much smaller, the flowers in form bear some slight resemblance to those of the Foxglove; and this likeness has been considered sufficient to justify the name of "Mexican Foxglove" for the plant. This name, however, is rather inappropriate. When a Foxglove is mentioned, we turn, naturally, to look for the aspiring stems; but in *Tetranema Mexicana* we find instead a plant of comparatively humble proportions. It is beautiful, but not stately like the Foxglove. Its small size, however, combined with a compact habit, renders it very useful in edging groups of larger greenhouse plants, and its pretty flowers never fail to please. The plant thrives luxuriantly in rich, sandy loam, and it is easily propagated by division or from seeds. The latter are borne in great abundance, and the plants produced from those sown in summer will bloom as profusely in winter, under pot culture, as those obtained from spring-sown seeds usually flower in summer.

THE BLACK CALLA.—It is only a year or two since an American firm distributed roots of a plant to which this name was given, with *Arum sanctum* added as a botanical name. The latter name was new, and the impression was thus conveyed that the plant also was new. Some of the roots had been sent here, and the development of the inflorescence was awaited with much curiosity, until the plant turned out to be one which had been cultivated as *Arum Palæstinum* (the correct name) more than a quarter of a century ago. It was introduced from Jerusalem by the Messrs. Veitch, of London, in 1864, and flowered at their nurseries during the following year. *A. Palæstinum* attains a height of from one to two feet, and resembles the common Calla Lily (*Richardia Æthiopica*) in general aspect. The long, drooping spathe is greenish on the outside, and blackish purple on the inner surface; the upper part of the conspicuous spadix is of the same blackish purple color. The fragrance of the inflorescence has been described as similar to that of the Violet; but to most people it calls to mind the odor of decaying Musk-melons. The plant is of no practical utility in garden work, but it may be grown as a curiosity. The treatment given to ordinary Callas will suit it very well.

Cambridge, Mass. *M. Barker.*

Chrysanthemum Queries.—II.

THE following questions, with Mr. John Thorpe's replies, are a continuation of those which we published last week:

"Has the constitution of the Chrysanthemum been impaired by long-continued crossing?"

No; on the other hand, the American-raised seedlings of the past three years are of a decidedly more vigorous habit than those of former years. Raisers of seedlings have now reached the point where they throw away all weakly seedlings, unless they have some new and striking feature which it is desirable to develop in future generations. When my seedlings are about four months old, being generally then in three-inch pots, I discard all plants of puny growth and constitutional weakness, thus doing away with all subsequent trouble, and often the temptation to keep a weakling when in flower.

"How shall we secure a race of Chrysanthemums that will endure our trying climatic conditions?"

If, at any time during May, 500 seedlings are planted in the open ground to which is given fairly good cultivation, there will come a time when some of these plants begin to weaken—that is, they make no progress—and as the trying summer lengthens many others will drop behind, until, probably, at the end of September, your 500 seedlings have a representa-

tion of fifty healthy and vigorous plants only. It is these fifty home-raised plants, then, that have the constitution and the vigor you desire to propagate. We ought to raise American plants for American gardens. A great many of the European novelties in all plants are failures here. It is not that they are worthless originally, but because the conditions they are subjected to are not to their liking. They were born and bred in other surroundings, and, as a rule, are better adapted to them. This, however, is not a rule without exceptions.

"Can strong plants be grown from the cuttings of a weak one?"

When cuttings are taken fairly early, it makes no apparent difference whether from a strong plant or a weak one of a given variety, provided always that they are properly treated afterward. A cutting no thicker than a knitting-needle, if well cared for from the start, should be as strong two months later as one that was originally as large as a lead-pencil. Some believe that permitting a plant to produce only a few flowers tends to strengthen the plant, and the fact is it costs the plant less effort to elaborate one flower than it does fifty. If a plant is allowed to carry all its flowers without disbudding, what a task it has! A single shoot of some varieties has as many as forty buds formed, and when we consider that each flower, when open, carries from 140 to 150 florets, it will be seen that the strain on the plant is a very severe one.

"Is the production of a blue Chrysanthemum possible?"

I do not see why it is impossible, and I hope yet to see a genuine blue Chrysanthemum. The old botanists declared that we could not have blue, yellow and red in the same species of plant. But we have blue, yellow and red Hyacinths, and I see no good reason why we should not get the same colors in the Chrysanthemum. The original colors of the Chrysanthemum-flower were limited to a pale yellow, white and a very weak lilac shade, and from these have been elaborated all the colors and shades we now enjoy in this flower. This has been accomplished by very slow and persistent work in selection and cross-fertilization and by the tendency of the plant to sport. Notice how the yellow shades have been intensified and how many shades there are. The lilac has become pink of pure quality. Cullingfordii oftentimes, when the flowers are closely shaded, presents us with nearly a pure tone of red. The most pronounced purple we have to-day comes from the lightly tipped, incurved Princess of Wales, in the form of a sport named Violet Tomlin. It is a true purple, and we cannot get purple without blue. To those who are hard at work watching the tendencies and developing new forms of the Chrysanthemum, the sudden appearance of a blue one would prove no great surprise. Raisers of seedlings frequently see signs of a new departure four or five years before it actually takes place. A blue Chrysanthemum may first be obtained from a sport.

The Influence of Pollen upon Fruit.—Among many experimental studies which have here been made of Tomatoes growing under glass the past winter, trials of pollinating in various ways have yielded, especially in one case, very interesting and suggestive results. One flower of a cluster was pollinated upon one side of the stigma with the least quantity of pollen which it was practicable to apply; to another flower of the same cluster was at the same time given a superabundance of pollen over the whole stigmatic surface. The two resulting fruits have grown and ripened side by side. The one grown from abundant pollination developed to a normal size, and, when cut through transversely, showed the usual even distribution of placentæ and seeds. The one scantily pollinated, on the other hand, reached only about one-fourth the size of its mate, and when cut like the other, seeds were found on only one side of the fruit; the other side, however, had grown almost symmetrically with it, but, instead of being filled with seeds, contained only the enlarged placentæ, making the fruit nearly solid on that side. This suggests an important field for further study in relation to the influence of pollination upon the development of fruit and related subjects, and it has practical bearings of no little importance.

Cornell University. *C. W. Mathews.*

Saxifraga Burseriana major.—This is an extremely pretty Saxifrage, and is well worth the attention of the gardener. It is a very old plant—at least the typical *S. Burseriana* is—having been described and figured in Jacquin's "Miscellanea" as long ago as 1778. The variety Major is far superior to the type, and has flowers about twice as large, although even on the same plant great variation in this respect is observable. The plants are almost perfectly hardy in England, but it is safer to have them kept in a cold frame during vigorous winters so that the pure white flowers may not be nipped off before their expansion in January and February.

London. *J. W.*

Correspondence.

Protection from Field Mice.

To the Editor of Garden and Forest:

Sir.—I wish to ask through your columns for advice as to the protection of trees, young and old, deciduous and evergreen, from the depredations of field mice. We have had snow on the ground for fourteen weeks, and, as the last of it is now disappearing, the ground is covered with a complete network of their runs. Their nests have been made of the grass under the snow, and they are now easily seen, but the late occupants have migrated. Their work, however, remains. Apple-trees, twenty-five years old, are completely girdled by them so that not a vestige of bark remains where they have been at work, but worse damage has been done among choice trees and shrubs recenly planted. A fine young Copper Beech is stripped of bark for quite two feet above the ground level. The damage was not visible until the snow cleared away, and then the ruin was beyond repair.

South Lancaster, Mass. *O. O.*

[A good way of protecting trees from mice is to tramp the snow hard about the trunks after every storm during the winter. The mice cannot push through the snow when it is packed. If the bark of the tree is washed late in autumn with some preparation distasteful to the mice this will often answer as a protection. Aloes, gas-tar, carbolic acid and sulphur are used for this purpose. After the injury has been done scions are sometimes laid over the girdled space, with their thin ends inserted under the bark above and below and carefully waxed and wrapped. This conservative surgery will in many cases save the tree.—Ed.]

"Insect Lime" for the Gypsy Moth.

To the Editor of Garden and Forest:

Sir.—The reference by Mr. J. G. Jack, in your issue for March 11th, to the almost explosive appearance in destructive numbers of *Liparis monacha* (nonne) in Germany, when discussing the war against an allied species of the Gypsy Moth in this country, leads me to send you a few brief notes from a paper which I read two weeks ago before the Entomological Society of Washington on the former subject almost on the very day when the Gypsy Moth Commission held its sessions in Boston.

It seems to be the world's practice for each community to go on trusting to its own experiences rather than profiting by that of others, exactly as it does in the forestry problem.

What these insect pests mean to a forest-administration will be understood when it is stated that the last ravages of the above-named "nonne" involved an area of over 100,000 square miles, the premature cutting of 55,900,000 cords of wood, and the most inconvenient disarrangement of working plans, which, in a forest-administration, are necessarily laid for 100 or more years in advance.

Many thousands of dollars were spent last year, and many more will be spent the coming year, not in exterminating, but in checking, the pest, until natural causes, like fungus diseases and parasites, will reduce it to its usual limited existence. Many remedies have been proposed and tried, and where such large areas are concerned and such values involved, they were, of course, tried without stinting expense and without losing sight of their practicability. In one district of 2,000 acres of Spruce-forest not less than $12,000 were spent experimentally.

The only really effective remedy was found in the application of bands of "insect lime," a glue specially prepared and extensively used in Germany. This preparation, applied in various ways, is useful against quite a number of insects. It would no doubt be applicable against our Canker-worm; against the Bag-worm, Fall-web-worm and Tussock Moth, and has been found most effective against the Gypsy Moth in its native country.

In this latter case the "insect lime" is best applied toward the end of the winter—that is, just now—upon the patches of eggs which this insect is in the habit of attaching to the outer bark of the trees. The glue, of course, prevents the hatching

of the eggs. The price of this preparation, which is specially manufactured in varying composition by several firms, is $2 per 100 pounds.

Against the "nonne" and other similar caterpillars, which wander up and down trees, a band of insect lime, two inches broad and a quarter of an inch thick, is applied around the trunk, breast-high, after the rough bark has been removed. With improved machines for scraping the bark and applying the glue, and which do the work three to five times as fast as it can be done by hand labor, the cost per acre of Spruce-forest was $1.80, of which $1.25 was for the material; it is, therefore, a cheap remedy. The bark scraper is a simple instrument of the plane type, and the banding machine, an apparatus to put on the glue quickly and of proper size, does not cost more than 50 cents, if purchased from the inventor. I am prepared to give addresses of the firms manufacturing the insect lime and the machines, if wanted, and further details in regard to their application. The effectiveness of the bands is due to the fact that the caterpillars, be it on account of the disagreeable smell (tar-oil) or of their objection to soiling their coats, are absolutely unwilling to cross the barrier, and can be gathered below the band and killed, or die from starvation. The insect lime must, of course, have the capacity of keeping fresh and maintaining its consistency for two or three months in all weathers, and this is the secret of its preparation.

The absolute success of this application as a preventive rather than a cure, and its freedom from the objectionable features which attach to the spraying of arsenic and other poisons, etc., certainly recommend it at least for trial in this country.

Forestry Division,
Department of Agriculture, Washington. *B. E. Fernow.*

Exhibitions.

Spring Flower Show at Philadelphia.

THE exhibitions of the Pennsylvania Horticultural Society are always attractive, and the Spring Flower Show, which was held last week, was rather happier in arrangement than usual. Nothing could be much better than the bank of foliage in front of the stage, with the graceful line of Palms rising above masses of green, and just enough of color from flowering plants to relieve it from monotony. In front of the stage, but separated from it by a walk, was a considerable space, covered with flowering plants and shrubs, Azaleas, Hydrangeas, Cytisus, etc., which was very effective, both by itself and in connection with its background. Why are not plants on exhibition arranged on the floor oftener than they are? This is the natural position for the greater proportion of them, and certainly, in this instance, if some of the specimen Palms and Ferns in the great collections had been placed on the floor they would have appeared to better advantage than on the stages, not only because the point of view would have been better, but because the valance around the staging was by no means decorative in itself, and it certainly did not add to the beauty of the plants, either in the way of harmony or contrast.

Apart from the ordinary plants on exhibition there were two groups which attracted great attention. The first of these was Dr. Williams' collection of dwarfed Japanese trees, of which much has been written. The specimens exhibited were said to range from fifty to a hundred years old, and yet they were hardly more than two feet high. What was interesting about them was the contorted and weather-beaten look which gave them a really venerable aspect, in spite of their minute proportions. One of them was a Pine, and the others seemed like different forms of Thuya. The second group consisted of several wagon-loads of Cactuses which Mr. Blanc had sent down from his immense collection. About 300 varieties were here represented in 500 specimens. Many of them were in flower, although this is not the season for them, and many more were carrying highly ornamental fruit. Besides the Cactuses there were some striking Aloes, Agaves, Euphorbias, and Mesembryanthemums. Among the most remarkable of the plants were two Anhaloniums and the so-called Bishop's Head (*Estrophytum myriostigma*). The genus Cereus was represented by some extraordinary and fantastic varieties of *C. flagelliformis*, *C. formosus* and *C. tuberosus*. Of Echinocacti the most interesting were *E. Arrigens*, *E. cornigerus*, *E. turbiniformis*, *E. Texensis* and *E. candidus*. Of the neat little Mammillarias the best were *M. echinata*, *M. elephantidens*, *M. lasiacantha*, *M. micromeris*, *M. pusilla* and *M. sanguinea*. Many other genera were equally well represented, and to large numbers of visitors the display was a revelation of the remarkable variety in form and in size and in habit which these grotesque and beautiful plants assume.

The foyer was bright with blooms of Roses, while of Orchids the best were those of Mr. C. F. Evans, whose plants were hung from the short stumps of branches of a dead Cedar, which was draped with Vines and Ferns. It would be hard to find better Roses than the Ulrich Brunners of Messrs. Pennock Brothers, Edwin Lonsdale and John Burton. In fact, this Rose seemed to justify the reputation which it enjoys about Philadelphia of being the most perfect of all Roses for forcing. Madame Luizet and Mrs. John Laing seemed to be of equal merit as usual, while the Jacqueminots and Wootons and Baroness Rothschilds were remarkably good. The exhibitors already named, with Messrs. Kift & Son, Heron & Nisbit took the principal prizes in Roses. *Lilium Harrisii* was abundantly displayed, and those by W. K. Harris, Michael Sammon and other growers left nothing to be desired. There were but few plants, however, of the more beautiful *L. longiflorum*, which always appears to excellent advantage in comparison with the Bermuda Lily, on account of its much firmer and more gracefully poised flowers.

The collections of choice and rare greenhouse plants from the gardens of the Messrs. E. W. Clark, George W. Childs, A. J. Drexel and H. A. Dreer were, as usual, the central features of the exhibition of this class of plants. One rarely sees anything better than the splendid Pritchardia exhibited by James Long, gardener to Mr. Drexel, or the great Livistona and the *Microlepia cristata* which Mr. Hughes sent down from Mr. Childs' collection. The premium for a new and rare plant went to the gardener of Mr. Drexel for *Spathiphyllum pictum*, who also took a premium for Palms and Ferns.

The Carnations attracted a good deal of attention, and a certificate of merit was justly given to E. G. Hill & Co., of Richmond, Indiana, for a remarkable collection of seedlings, many of them of immense size and of clear distinct colors. Mr. H. E. Chitty, of Paterson, Edward Swain, Avondale, and Charles T. Starr, of the same place, all showed new departures in Carnations, and, undoubtedly, the group, taken altogether, was the finest ever seen in Philadelphia.

Special mention ought to be made also of the new greenhouse Azalea, called Vervainiana, which was shown by Mr. James Dean, of Bay Ridge, New York, for the first time. The flower was double and richly variegated from white to deep crimson. Near by these was also a group of hardy Azaleas of especial merit, which were shown, for the first time in this country, by Pitcher & Manda, of Short Hills, New Jersey. The flowers were of good size and of distinct colors, and they promise to be valuable additions to the shrub-border.

Recent Publications.

Monographie der Abietineen der Japanischen Reiches. By Heinrich Mayr. Munich, 1890, pp. 1–104, with seven colored plates and analyses.

Dr. Mayr, who is now well known in this country, where he has traveled extensively, by his remarkable work on the forests of North America, has devoted some part of the last three years, during which he has occupied the chair of Silviculture in the Imperial University of Tokio, to studying in their native forests the various forms of *Abietiniæ*, in which they abound. Dr. Mayr, so far as relates to the grouping of the species of these trees, follows in general lines the authors who have written before him on this subject. He proposes, however, several new species detected by him during various journeys made in the Japanese forests. These are *Abies umbellata*, a tree which appears to resemble the now well-known *A. brachyphylla*, if one may judge from the plate; *Picea Hondœnsis*, belonging to the group of which *P. Ajanensis* is the best-known representative; *Pinus pentaphylla*, a large and interesting white Pine of the mountains of the central island, where Dr. Mayr discovered it, and related to our *Pinus Strobus*, but with shorter and smaller cones, as they appear in the plate. A Larch from the Kurile Islands is distinguished as *Larix Kurilensis*, and the little Pine which has been regarded a variety of the Cembran Pine of Europe is now considered distinct from that widely distributed species under the name of *P. pumila*.

The attention which is given to the description of cultivated varieties of different Japanese conifers adds particular value and interest to this work for the cultivators of trees, as descriptions will be found in it of many varieties cultivated and esteemed by the Japanese which the tree-lovers of America and Europe now hear of for the first time. Of *Pinus Thunbergii*, for example, nine varieties are described; of *P. densiflora* more than twenty varieties are recognized; of *P. parviflora* six, and of *P. pentaphylla* two; in all, some forty varieties of Pines, of which more than half have already been

distinguished in Japanese works of dendrology, the others now being first characterized by Dr. Mayr.

The views which the author expresses with regard to the specific rank of Japanese conifers may not be all adopted, but his work, based as it is on observations made in the field by a dendrologist of great experience and equipped with trained powers of observation, is a most important and valuable contribution to the knowledge of trees. It would, perhaps, have been more generally useful if the characters of the different species and varieties had been written in Latin instead of in German, and the absence of an index, an inexcusable omission in a work of this sort, makes the pursuit through its pages of synonyms a serious and laborious undertaking.

Notes.

Mrs. S. T. Rorer, principal of the Philadelphia Cooking School, has prepared a neat volume of nearly 200 pages, entitled "How to Cook Vegetables." The book is not for sale, but is very appropriately used as a premium by W. Atlee Burpee & Co., the Philadelphia seedsmen.

The clear red flowers of *Erica carnea*, the Mediterranean Heath, are among the first to greet the eye in Central Park. A colony of these plants covering a rod or so along the bridle-path, opposite Eighty-first Street, is now making a cheerful show as their bright blooms are seen among Trailing Juniper, *Enonymus radicans*, and Scotch Heather, *Calluna vulgaris*.

A plant of *Androsace sarmentosa* in bloom has been sent to this office by Mr. George C. Woolson, who flowered it in one of his cool houses at Passaic, New Jersey. It is one of the prettiest of the genus, and carries a globular cluster of bright pink flowers on a stem rising two or three inches above a rosette of gray-green, softly pubescent leaves. It will probably prove hardy, and, if so, it will be a welcome addition to our list of early-flowering plants.

No. 2 of Volume II. of the *Memoirs of the Torrey Botanical Club* contains an account of the "Spring Flora of South-western Virginia," written by Miss A. M. Vail, who, some months ago, recorded her observations in Garden and Forest. The paper is annotated by Professor N. L. Britton, who describes as new *Clematis Addisonii*, *Pentstemon lævigatus*, var. *canescens*, and *Senecio aureus*, var. *angustifolius*. The same number also contains a paper by Mr. Arthur Hollock, on the "Autumn Flora of South-eastern Virginia."

Bartram's Garden, the first botanical garden established in the New World, and long the most famous spot of its kind in the United States, has, principally through the energy of Mr. Thomas Meehan, been acquired by the city of Philadelphia as one of its smaller parks, and the city has now taken possession of it and appointed a superintendent to preserve it. An interesting account of the garden, and of its founder, John Bartram, and of his son, William Bartram, appeared in the *Public Ledger* of Philadelphia on the 16th of the present month.

Writing to a friend in this country, under date of March 7th, Mr. W. Thompson of Ipswich, England, says: "The worst of our winter is over, I trust, but it is still cold, and plants are backward for us. Pear-trees are making a wonderful show of buds, which looks like the promise of a good fruit-year, although it does not follow that flowers will be perfected in fruit. But we have lost many plants reputed to be hardy, and what have survived may be regarded as hardy beyond all doubt. *Polemonium pauciflorum*, one of Mr. Pringle's plants, has stood well, to my surprise."

Mr. W. Junker, writing recently in *Petermann's Mittheilungen* about the journey he made five years ago between the Albert and Victoria Nyanzas lakes, spoke of the vast Papyrus-swamps which line the banks of the streams, and said that the natives use their stems to construct floating bridges or, where the river is too wide to be bridged, rafts, which are propelled across. In another account of the same region, given lately by Mr. Jackson, it was said that the British East Africa Company is trying to develop the large tracts of country it controls, by planting, in favorable localities, valuable timber-trees from India, as well as by importing colonies of Persians and Indians to start useful plantations of other sorts.

A circular from Mr. Thomas Meehan, which we have just received, states that he is determined to revive the publication of the discontinued "Flowers and Ferns of the United States" in monthly issues. Under the title of "Meehan's Monthly" this publication will contain, in addition to the colored plate of some wild flower, notes on various features of general gardening. The whole will be illustrated with wood-cuts. In the conduct of this monthly Mr. Thomas Meehan will be assisted by his sons, Thomas B. Meehan, J. Frank Meehan and S. M. Meehan. The first number of the periodical will commence in June, and its price has been fixed at two dollars a year. Mr. Meehan's return to horticultural journalism will be welcomed by many readers of the *Gardeners' Monthly* who felt something like a personal bereavement at the discontinuance of that excellent magazine.

The *Jackson* (California) *Ledger* notes the fact that the trees which were planted at the Experiment Station, located on the foot-hills, were obtained from nurseries along the coast, in interior valleys and on foot-hills. The stock was, in each case, thrifty and strong, and all seemed to start under the same conditions, but there is already a marked difference in favor of the trees from nurseries where the conditions of climate and soil are similar to those of the station. These trees have altogether outgrown those which were involved in a sudden change of conditions, and this seems to indicate that, in selecting a young orchard, it would be always advisable to procure trees from a location where the conditions resemble, as nearly as possible, those of the place where the trees are to have their permanent home.

At the nurseries of H. Meyers, Passaic, New Jersey, we observed last week that *Meconopsis Nepalense*, an Indian Poppy, was coming up strong from plants which had wintered with no other covering than some loose litter. These plants came from seed sown last spring in partial shade. It is something of a surprise to find this Meconopsis so hardy. Another plant of the Poppy family, *Eomicon chionantha*, which has already been described in these columns, was flowering in the greenhouse, and it will probably survive our winters out-of-doors. Among other hardy plants flowering in cold frames or in the greenhouse were *Alyssum spinosum*, a trailing species with glaucous foliage and yellow flowers; *Aster alpinus*, and its white variety, with flowers as large as a half-dollar, on stems four inches long; *Geranium tuberosum*, with finely cut foliage and flowers after the style of our common native species; and *Erpetion reniforme*, the Australian Violet.

The death of Mr. John B. Russell, which occurred at Indianapolis on the 11th instant, removed one of the pioneers of American horticulture. Mr. Russell was born at Cambridge, Massachusetts, July 23d, 1801. He was a printer by trade, having been instructed in that art at the famous University Press, in his native town. In 1823 he started a printing establishment in Boston, where he printed the *Christian Register*. In 1824 he purchased the *New England Farmer*, and conducted it in connection with a seed business at 52 North Market Street. His interests now brought him in contact with agriculturists and horticulturists from all parts of the country, and ultimately his offices became an acknowledged rendezvous, where matters of interest to the cultivators of the time were discussed. It was here that the idea of forming a horticultural society was first mooted, and the first public suggestions on the subject were made in an article which appeared in the *New England Farmer* of January 9th, 1829. In that month the office of the *Farmer* was removed from the third to the second story, and the society, when formed, occupied a part of the room vacated by Mr. Russell, and the *Farmer* became the organ of the society, and so remained until its publication ceased in 1846. The society was incorporated in June, 1829, and Mr. Russell at once commenced practical work as general agent of the society, and continued it until 1832, when he sold his interest in the Market Street establishment. After leaving there he engaged in another publishing enterprise until 1839, when he went to Cincinnati, where he became general and commercial reporter for *The Gazette*, which position he held until 1858. Later he was clerk at Washington to the Commissioner of Pensions, and in 1868 he was appointed Librarian of the Department of Agriculture. He retained this position until ill health compelled his retirement. Mr. Russell was the last surviving corporator of the Massachusetts Horticultural Society. Although hardly a surprise, on account of physical infirmity and increasing years, his death is much regretted by those about Boston who know of the good work he accomplished when laborers in the field of horticulture were few. There is much to interest readers of the present day in Mr. Russell's "Reminiscences of the Massachusetts Horticultural Society," which appeared in *Tilton's Journal of Horticulture*.

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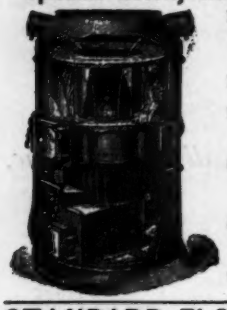

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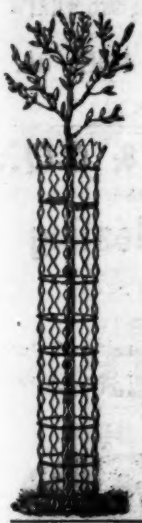

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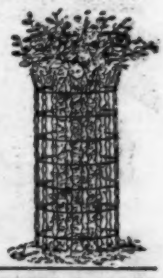

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